

What is claimed is:

1. A hydrodynamic bearing system comprising a shaft, a thrust plate supported on an end of the shaft and having first and second axially directed surfaces, a sleeve surrounding the shaft and having an inner surface defining a gap with an outer surface of the shaft, a journal bearing being defined in the gap by grooves on one of the surfaces and fluid in the gap, the hydrodynamic bearing system further comprising a first thrust bearing defined in a gap between at least one of the axially directed surfaces of the thrust plate and a cooperating surface facing one of the thrust plate surfaces across a gap, and a counterplate cup having a base defining one surface of a second bearing thrust and defining a gap therewith, and having upraised sides tightly fitted over a outer surface of the sleeve.
2. A fluid dynamic bearing as claimed in Claim 1 wherein sides of the counterplate cup are fitted over a reduced diameter section of the sleeve.
3. A fluid dynamic bearing as claimed in Claim 1 wherein a region of the side of the cup is fixed to an outer surface of the sleeve by adhesive or epoxy.
4. A fluid dynamic bearing as claimed in Claim 3 wherein the adhesive or epoxy joins the distal end of the cup side to the outer surface of the reduced diameter portion of the sleeve.
5. A fluid dynamic bearing as claimed in Claim 4 wherein one of the base of the cup and the axially distal surface of the thrust plate comprises a pattern of grooves to establish a fluid dynamic bearing across the gap between the two surfaces, fluid in the gap establishing the thrust bearing to support relative rotation of the thrust plate and the counterplate cup.
6. A method of assembly a fluid dynamic bearing comprising the steps of:
defining the bearing, at least partially, assembling a shaft having a thrust plate at an end thereof and inserted through a bore in a sleeve,

providing a counterplate cup with a layer of fluid therein adapted to serve as the bearing fluid in a fluid dynamic bearing,

moving the counterplate cup axially toward the thrust plate so that a side of the counterplate cup passes over a radial end of the thrust plate and over a reduced outer diameter of the sleeve so that the counterplate cup is the sleeve and encloses a gap over an outer surface of the thrust plate, forcing oil from the cup into a gap between the thrust plate and the sleeve and a gap between an outer surface of the shaft and an inner surface of the sleeve thereby providing lubricating fluid for a fluid dynamic bearing defined between the shaft and the sleeve and the thrust plate and the sleeve.

7. A method as claimed in claim 6 including the further step of adhesively fastening a surface of the side of the cup to an outer surface of the sleeve so that fluid cannot be lost from the hydrodynamic bearing.
8. A method as claimed in claim 7 wherein the inner surface of the side of the cup is press fit over the outer diameter of the sleeve.
9. A method as claimed in claim 8 wherein a counterplate cup is provided having an interior diameter at least slightly greater than the diameter of the thrust plate of the shaft and thrust plate combination.
10. A method as claimed in claim 9 including the further step of adhesively fastening a surface of the side of the cup to an outer surface of the sleeve so that fluid cannot be lost from the hydrodynamic bearing.
11. A spindle motor for use in a disc drive comprising a shaft supporting a sleeve and hub for relative rotation, the hub supporting one or more discs for rotation about the shaft, and hydrodynamic bearing means for supporting the hub for rotation about the shaft.

12. A spindle motor as claimed in claim 11 wherein the hydrodynamic bearing means comprises a shaft and a thrust plate, and means for filling gaps of the hydrodynamic bearing means with fluid and entrapping the fluid in the gaps.
13. A fluid dynamic bearing as claimed in Claim 1 wherein sides of the counterplate cup are fitted over a reduced diameter section of the sleeve.
14. A fluid dynamic bearing as claimed in Claim 1 wherein a region of the side of the cup is fixed to an outer surface of the sleeve by adhesive or epoxy.
15. A fluid dynamic bearing as claimed in Claim 3 wherein the adhesive or epoxy joins the distal end of the cup side to the outer surface of the reduced diameter portion of the sleeve.
16. A fluid dynamic bearing as claimed in Claim 4 wherein one of the base of the cup and the axially distal surface of the thrust plate comprises a pattern of grooves to establish a fluid dynamic bearing across the gap between the two surfaces, fluid in the gap establishing the thrust bearing to support relative rotation of the thrust plate and the counterplate cup.